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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/549,904	09/20/2005	Takayuki Kato	Q90376	7150
65565	7590	12/05/2008		
SUGHRUE-265550			EXAMINER	
2100 PENNSYLVANIA AVE. NW			ROBINSON, ELIZABETH A	
WASHINGTON, DC 20037-3213			ART UNIT	PAPER NUMBER
			1794	
		MAIL DATE	DELIVERY MODE	
		12/05/2008	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/549,904	<b>Applicant(s)</b> KATO ET AL.
	<b>Examiner</b> ELIZABETH ROBINSON	<b>Art Unit</b> 1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 02 September 2008.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1 and 3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1 and 3 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/OS/02)  
 Paper No(s)/Mail Date 10-29-2008
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_

#### **DETAILED ACTION**

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1 and 3 are currently pending.

#### ***Claim Rejections - 35 USC § 103***

**Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barron et al. (US 2004/0224155).**

Regarding claim 1, Barron (Paragraph 37) teaches a porous hollow alumina (ceramic) sphere. The spheres are formed from 1-80 micron polystyrene beads that are coated with an aqueous solution of acetate-alumoxane (A-alumoxane) (Paragraphs 39-40). The thickness of the coating layer is about 1 micron or greater (Paragraph 45). Thus, the range of particle sizes overlaps the range of the instant claim. The A-alumoxane is prepared by the method described in Callender et al. (*Aqueous Synthesis of Water-Soluble Alumoxanes: Environmentally Benign Precursors to Alumina and Aluminum-Based Ceramics*), which is incorporated by reference in the Barron publication. Callender (Page 2422) teaches that the alumoxane films are formed of particles (powders). Barron (Paragraph 42) teaches that the alumoxane is converted to alumina, the polystyrene cores are removed and then the spheres are fired to form the alumina shell. The firing step bonds the ceramic material together.

Barron does not explicitly teach the breaking strength of the particles. However, Barron (Paragraph 46) teaches that the spheres have a hardness that is approximately as hard as corundum. This mineral is second only to diamonds in hardness.

With this high degree of hardness for the spheres, it would be obvious to one of ordinary skill in the art that the spheres should meet the breaking strength limitation.

Barron (Paragraph 45) teaches that the shell layer has a thickness of approximately 1 micron for a 2 wt% A-alumoxane solution and that thicker walls are formed with increasing alumoxane concentrations.

It would be obvious to one of ordinary skill in the art to vary the concentration of the alumoxane solution to obtain a desired thickness as is taught by Barron.

Regarding claim 3, Callender (Figure 11, Page 2427) teaches that there is a range of particle sizes for the A-alumoxane particles.

#### ***Response to Arguments***

Applicant's arguments filed September 2, 2008 have been fully considered but they are not persuasive.

Applicant argues that Barron does not teach the breaking strength of the spherical shells. However, as stated above, Barron (Paragraph 46) teaches that the spheres have a hardness that is approximately as hard as corundum. This mineral is second only to diamonds in hardness and thus, the spheres should have a breaking strength that meets the limitations of the instant claims.

Applicant argues that Barron does not provide guidance to lead one of ordinary skill in the art to form ceramic particles with a shell having an average thickness of 2-60 microns. However, as stated above, Barron (Paragraph 45) teaches that the shell layer has a thickness of approximately 1 micron for a 2 wt% A-alumoxane solution and that thicker walls are formed with increasing alumoxane concentrations. Thus, one of ordinary skill in the art would have guidance for forming a hollow ceramic particle with a shell of a desired thickness.

Applicant's arguments, see Pages 3 and 4, filed September 2, 2008, with respect to the rejection of claims 1 and 3 over Matijević et al. (US 5,318,797) have been fully considered and are persuasive. Matijević does not teach an example combining both the particle size and shell thickness of the instant claims. The 35 U.S.C. 102(b) rejections of claims 1 and 3 have been withdrawn.

Due to cancellation of claims 4-9, the rejections from the May 30, 2008 Office Action over Kamimura et al. (US 5,223,213) are withdrawn.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELIZABETH ROBINSON whose telephone number is (571)272-7129. The examiner can normally be reached on Monday- Friday 8 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. R./  
Elizabeth Robinson  
Examiner, Art Unit 1794

December 1, 2008

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art  
Unit 1794

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